

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended) A wire bonding machine for bonding a wire to a semiconductor device, the wire bonding machine comprising:

a wire bonding head ~~having supporting~~ a bonding tool ~~mounted to it~~, the bonding tool adapted to attach a wire end to a semiconductor device, the bonding head having at least a portion which is pivotable about a first horizontal axis, the bonding tool being ~~mounted to~~ supported by the pivotable portion so as to be vertically movable, the bonding head being rotatably mounted to a portion of the wire bonding machine so as to permit rotation of the bonding tool about a ~~vertically oriented rotational~~ axis;

a work table for supporting at least one semiconductor device to be wire bonded; and

a ~~conveyance-positioning~~ system for ~~translating-positioning~~ the work table in one direction relative to the bonding head during the wire bonding operation.

Claim 2 (Currently Amended) A wire bonding machine according to claim 1 further comprising a second wire bonding head mounted above the positioning ~~conveyance~~ system.

Claim 3 (Currently Amended) A wire bonding machine for bonding a wire to a semiconductor device, the wire bonding machine comprising:

a wire bonding head ~~having supporting~~ a bonding tool ~~mounted to it~~, the bonding tool adapted to attach a wire end to a semiconductor device, the bonding tool being rotatable alone or in combination with at least a portion of the bonding head about ~~an axis extending along (1) a~~ substantially horizontal axis; and ~~(2) about an axis extending along a~~ substantially vertical axis;

a work table for supporting at least one semiconductor device to be wire bonded; and

a ~~positioning conveyance~~ system for ~~positioning~~ translating the work table in a substantially horizontal direction during the wire bonding operation and ~~substantially orthogonal to the horizontal axis about which the bonding tool rotates.~~

Claim 4 (Currently Amended) A wire bonding machine for bonding a wire to a semiconductor device, the wire bonding machine comprising:

a wire bonding head ~~having supporting a bonding tool mounted to it,~~ the bonding tool being rotatable alone or in combination with at least a portion of the bonding head about a substantially vertical axis and a substantially horizontal axis ~~the bonding head being mounted to the wire bonding machine so as to permit vertical displacement and rotational displacement of the wire bonding tool, the rotational displacement being about a vertical axis;~~

a work table for supporting at least one semiconductor device to be wire bonded; and

a ~~positioning conveyance~~ system for ~~positioning~~ translating the work table in a substantially horizontal direction during the wire bonding operation.

Claim 5 Cancelled

Claim 6 (Currently Amended) A wire bonding machine according to claim ~~5-4~~ wherein the ~~conveyance system translates the work table in a substantially horizontal direction~~ wire bonding head is rotatably supported by a portion of the wire bonding machine such that the bonding tool is rotatable about the substantially vertical axis.

Claim 7 (Currently Amended) A wire bonding machine according to claim ~~6-4~~ wherein the substantially horizontal direction is ~~conveyance system translates the work table in a direction,~~ substantially orthogonal to the substantially horizontal axis.

Claim 8 (Original) A wire bonding machine according to claim 4 wherein the at least one semiconductor device is positioned in a magazine with at least one other semiconductor device.

Claim 9 (Original) A wire bonding machine according to claim 8 further comprising a magazine handler for feeding the magazine to the conveyance system.

Claim 10 (Currently Amended) A wire bonding machine for bonding a wire to a semiconductor device, the wire bonding machine comprising:

a fixture supporting at least one semiconductor device to be wire bonded in a substantially horizontal plane; ~~and~~

a wire bonding head ~~including supporting a bonding tool secured thereto, the wire bonding head being rotatably mounted to a portion of the wire bonding machine to permit rotation of the bonding tool about a rotational substantially vertical axis, the bonding tool being rotatable about a substantially horizontal axis alone or in combination with the wire bonding head, the rotational axis substantially vertical with respect to the horizontal plane; and~~
a positioning system for positioning the fixture in a substantially horizontal direction.

Claim 11 Cancelled.

Claim 12 (Currently Amended) The wire bonding machine according to claim ~~11~~ 10 wherein the bonding head has a longitudinal axis and the positioning conveyance system translates the fixture in a direction at an acute angle with respect to the longitudinal axis of the bonding head.

Claim 13 (Currently Amended) The wire bonding machine according to claim 10 wherein the bonding tool is rotatable about ~~a the horizontal axis, the horizontal axis substantially parallel to the horizontal plane~~ for movement of the bonding tool in a vertical direction.

Claim 14 (Original) The wire bonding machine according to claim 13 wherein at least a portion of the wire bonding head is rotatable about the horizontal axis and the bonding tool is secured to the portion of the wire bonding head to rotate about the horizontal axis.

Claim 15 (Currently Amended) The wire bonding machine according to claim 10 further comprising a motor drive assembly ~~mounted or~~ engaged with the wire bonding head on an opposite side of the ~~rotational~~ vertical axis from the bonding tool.

Claim 16 (Currently Amended) A wire bonding machine for bonding a wire to a semiconductor device, the wire bonding machine comprising:
_____ a fixture supporting at least one semiconductor device to be wire bonded in a substantially horizontal plane;
_____ a wire bonding head supporting a bonding tool, the wire bonding head being rotatably mounted to a portion of the wire bonding machine to permit rotation of the bonding tool about a vertical axis; and
_____ a motor drive assembly engaged with the wire bonding head on an opposite side of the vertical axis from the bonding tool. ~~The wire bonding machine according to claim 15 wherein components of the bonding head have~~ having a mass that is substantially balanced on opposite sides of the ~~rotational~~ vertical axis.

Claim 17 (Currently Amended) The wire bonding machine according to claim 10 further comprising a second wire bonding head including a second bonding tool ~~secured thereto~~ supported thereby, the second wire bonding head rotatably mounted to a portion of the wire bonding machine to permit rotation of the second bonding tool about a second ~~rotational~~ vertical axis, ~~the second rotational axis substantially vertical with respect to the horizontal plane.~~

Claim 18 (Currently Amended) The wire bonding machine according to claim 10 further comprising a camera ~~directed toward the fixture~~ for receiving an image of at least one of the fixture or the at least one semiconductor device.

Claim 19 (Currently Amended) The wire bonding machine according to claim 18 wherein the camera is ~~secured to~~ supported by the bonding head.

Claim 20 (Currently Amended) The wire bonding machine according to claim 18 wherein the camera is mounted to a camera conveyance system which carries the camera in a substantially horizontal direction ~~in the horizontal plane~~.

Claim 21 (New) The wire bonding machine according to claim 3 wherein the substantially horizontal direction is substantially orthogonal to the substantially horizontal axis about which the bonding tool rotates.